We claim:

1. A chromatic dispersion compensator, comprising:

a polarization changer;

a beam delay element; and

a beam director,

wherein the polarization changer receives an optical beam having a first unit of group delay induced thereon by the beam delay element and induces a change in polarization of the optical beam prior to transmitting the optical beam to the beam director, the change in polarization inducing a path change on the optical beam by the beam director whereupon the optical beam is redirected to the beam delay element whereat a second unit of group delay is induced on the optical beam.

2. The compensator of claim 1, wherein the optical beam is a portion of an input optical beam and wherein the compensator induces multiple units of group delay on other portions of the input optical beam and re-combines the optical beam with the other portions into an output optical beam.

3. The compensator of claim 1, wherein the path change is assisted by one or more ninety degree mirrors.

4. The compensator of claim 1, wherein the redirection is assisted by one or more ninety degree mirrors.

5. The compensator of claim 1, wherein the beam delay element comprises a Gires-Tournois etalon.

6. The compensator of claim 1, wherein the beam delay element comprises a plurality of Gires-Tournois etalons.

7. The compensator of claim 1, wherein the beam director comprises a polarizing beam splitter.

8. The compensator of claim 1, wherein the beam director comprises a crystal polarizer.

9. The compensator of claim 1, wherein the polarization changer comprises a quarter-wave plate.

10. The compensator of claim 1, wherein the incidence of the optical beam into the beam delay element is substantially normal.

11. A method for chromatic dispersion compensation, comprising the steps of:

directing based on a first polarization an optical beam to a delay element;

inducing a first unit of group delay on the optical beam at the delay element;

changing the polarization of the optical beam from the first polarization to a second polarization;

inducing a path change on the optical beam based on the second polarization;

redirecting the optical beam to the delay element; and

inducing a second unit of group delay on the optical beam at the delay element.

12. The method of claim 11, further comprising the step of re-combining the optical beam with other portions of an input optical beam upon which multiple units of group delay have been induced.

13. The method of claim 11, wherein the path change is assisted by one or more ninety degree mirrors.

14. The method of claim 11, wherein the redirecting is assisted by one or more ninety degree mirrors.

15. The method of claim 11, wherein the beam delay element comprises a Gires-Tournois etalon.

16. The method of claim 11, wherein the beam delay element comprises a plurality of Gires-Tournois etalons.

17. The method of claim 11, wherein the directing step is performed by a polarizing beam splitter.

18. The method of claim 11, wherein the directing step is performed by a crystal polarizer.

19. The method of claim 11, wherein the changing step is performed by a quarter-wave plate.

20. The method of claim 11, wherein the incidence of the optical beam into the beam delay element is substantially normal.